

CHAPTER 13

HIGH PRESSURE OXYGEN MANIFOLD AND CHECK VALVE ASSEMBLY

P/N B40831-1

Section 13-1. Description

13-1. GENERAL.

13-2. The High Pressure Oxygen Manifold and Check Valve Assembly CRU-108/A26U (P/N B40831-1) is manufactured by Carleton Technologies, Inc. (CAGE 05395) for use on the P-3 Sea Stallion (figure 13-1). The manifold and check valve assembly is designed for routing system high pressure oxygen to the aircraft pressure reducer assembly and to serve as a connection for filling of oxygen cylinders installed in the aircraft. Table 13-1 contains leading particulars for the high pressure oxygen manifold and check valve assembly.

Table 13-1. Leading Particulars for High Pressure Oxygen Manifold and Check Valve Assembly

P/N .....	B40831-1
Ports .....	C1, C2, C3, Outlet, Filler
Weight .....	3.5 lbs
Height .....	3 1/2 in.
Length .....	1 1/2 in.
Width .....	3 1/2 in.
Operating Pressure Range .....	50 to 2100 psig

13-3. CONFIGURATION.

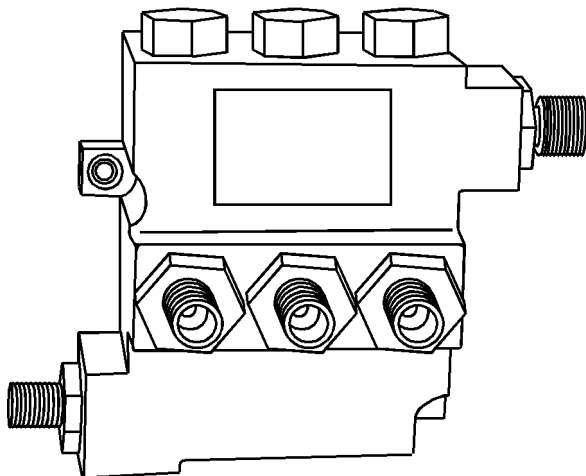
13-4. The Oxygen Manifold and Check Valve (P/N B40831-1) is a manifold body that utilizes 5 adapters (P/N B40833-1) for mating the manifold and check valve to the aircraft system.

13-5. FUNCTION.

13-6. The manifold and check valve assembly filler port is connected to the aircraft oxygen high pressure check valve, ports C1, C2, and C3 are connected to the three aircraft oxygen supply cylinders, and the outlet port is connected to the system oxygen pressure reducer assembly and system high pressure oxygen gage. The manifold assembly incorporates six gravity fed check valves which prevent the flow of oxygen from one cylinder to another and from the oxygen cylinders back through the manifold filler valve. The manifold assembly outlet port routes system oxygen to the high pressure gage and oxygen pressure reducer assembly (figure 13-2).

13-7. SERVICE LIFE.

13-8. The manifold and check valve assembly shall remain in service as long as repair cost does not exceed 75% of cost of the value.



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Figure 13-1. High Pressure Oxygen Manifold and Check Valve Assembly CRU-108/A26U

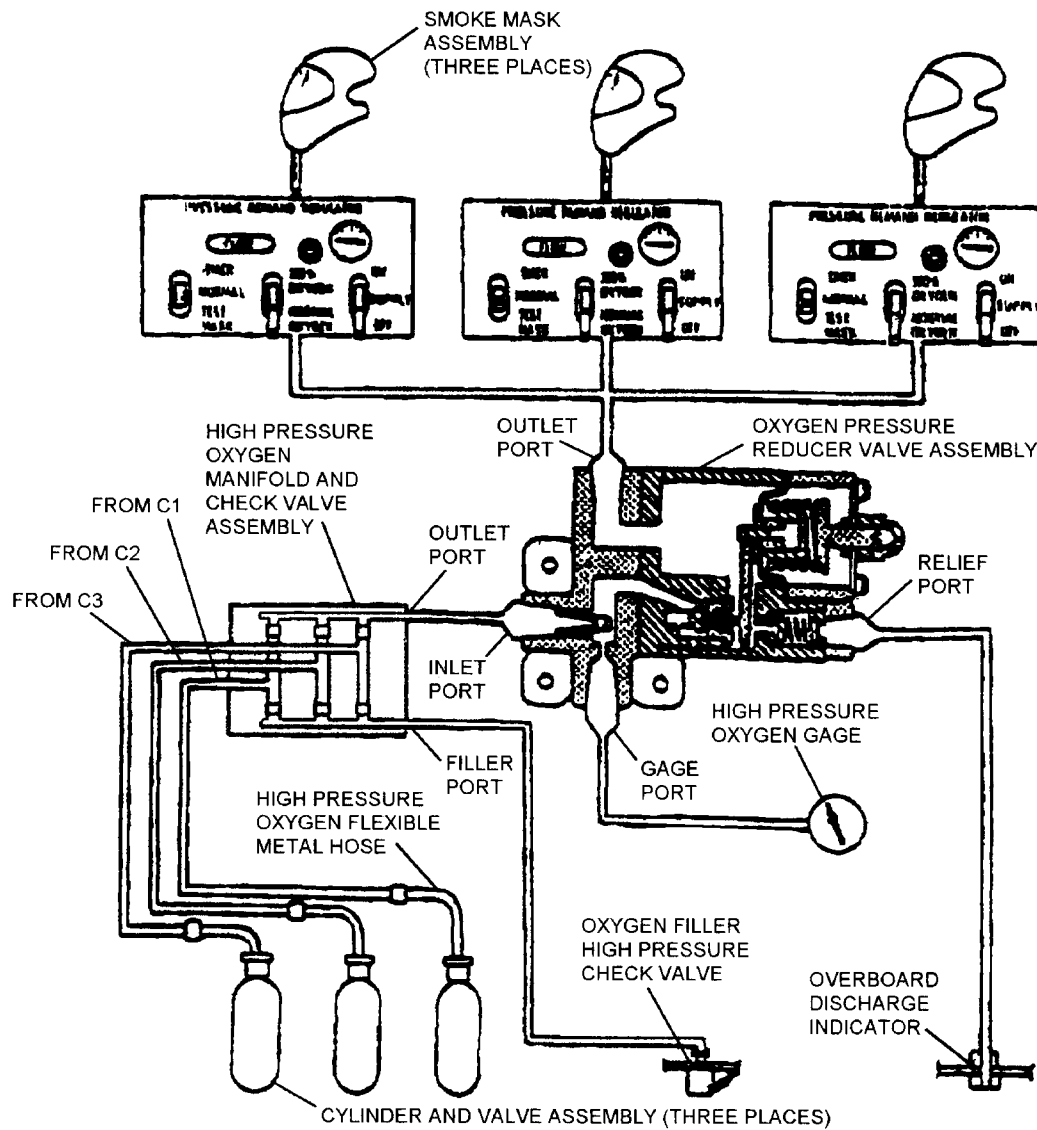


Figure 13-2. Functional Diagram of P-3 Oxygen System

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## 13-9. REFERENCE NUMBERS, ITEMS, AND SUPPLY DATA

13-10. [Section 13-5](#), [Installed Parts Breakdown](#), contains information on the assembly and each component part of the manifold assembly. The figure and index number, reference or part number, description, and units per assembly are provided with the breakdown.

## Section 13-2. Modifications

### 13-11. GENERAL.

13-12. No modifications to this valve assembly are required or authorized at this time.

## Section 13-3. Performance Test Sheet Preparation

### 13-13. GENERAL.

13-14. Flows provided in applicable directives are stated in liters per minute (lpm) and are not measurable by the manometers used in the oxygen system component test stands. Flows must be converted to inches of water (inH<sub>2</sub>O), the form of measurement which can be read on test stand manometers.

#### NOTE

The various graphs supplied with each test stand, Models 1172AS100 and 1316AS100 are used in converting flows. These graphs are not interchangeable between test stands. A new set of graphs will be provided each time the test stand is calibrated.

13-15. The information provided in the tables in this section is to be recorded on the Performance Test Sheet ([figure 13-3](#)).

13-16. The Performance Test Sheet is a sample only but may be reproduced for local use.

13-17. The following test requires conversion of flow from actual lpm to indicated inH<sub>2</sub>O.

1. Check Valve and Outlet Flow Test. To convert the actual 50 liter per minute to inH<sub>2</sub>O, proceed as follows:

a. Using the vent flow graph, find 50 lpm at bottom of graph, trace up to nitrogen line on the graph, then to the left for equivalent inH<sub>2</sub>O flow.

b. Record inH<sub>2</sub>O flow on Performance Test Sheet in space provided.

13-18. The following tests require no conversion flows:

1. External Leakage Test.

2. Outlet Flow Check Valve Leakage Test.

3. Filler Flow Check Valve Leakage Test.

4. Oxygen Purge.

## NAVAIR 13-1-6.4-1

PERFORMANCE TEST SHEET  
HIGH PRESSURE OXYGEN MANIFOLD AND CHECK VALVE ASSEMBLY  
PART NUMBER B40831-1

Date: \_\_\_\_\_ Part No. \_\_\_\_\_ Manifold Serial No. \_\_\_\_\_ Test Stand Serial No. \_\_\_\_\_

Test Stand Operator \_\_\_\_\_ Inspected By (CDI/QAR) \_\_\_\_\_

1. External Leakage Test:

A. 500 psig (No leakage allowed) \_\_\_\_\_

B. 1500 psig (No leakage allowed) \_\_\_\_\_

2. Outlet Flow Check Valve Leakage Test: (50 and 1000 psig applied to outlet 50 CCM maximum leak)

A. C1 Port Leakage: 50 psig \_\_\_\_\_ 1000 psig \_\_\_\_\_

B. C2 Port Leakage: 50 psig \_\_\_\_\_ 1000 psig \_\_\_\_\_

C. C3 Port Leakage: 50 psig \_\_\_\_\_ 1000 psig \_\_\_\_\_

3. Filler Flow Check Valve Leakage Test: (50 and 1000 psig applied to ports C1, C2, C3 50 CCM maximum leak)

A. C1 Port Leakage: 50 psig \_\_\_\_\_ 1000 psig \_\_\_\_\_

B. C2 Port Leakage: 50 psig \_\_\_\_\_ 1000 psig \_\_\_\_\_

C. C3 Port Leakage: 50 psig \_\_\_\_\_ 1000 psig \_\_\_\_\_

4. Flow Check Valve and Outlet Flow Test: (140 psig, 50 LPM \_\_\_\_\_ inH<sub>2</sub>O, 20 psig Difference)

A. C1 Port: N<sub>2</sub> Input Press Gage (27) Reading \_\_\_\_\_

B. C2 Port: N<sub>2</sub> Input Press Gage (27) Reading \_\_\_\_\_

C. C3 Port: N<sub>2</sub> Input Press Gage (27) Reading \_\_\_\_\_

D. Outlet Port: N<sub>2</sub> Input Press Gage (27) Reading \_\_\_\_\_

5. Manifold and Check Valve Assembly Purge: (200 psig Aviators Breathing Oxygen for 3 minutes)

**Figure 13-3. Manifold and Check Valve Assembly Performance Test Sheet**

Section 13-4. Maintenance

13-19. GENERAL.

13-20. This section contains the procedural steps for inspecting, testing, disassembly, and assembly of the manifold and check valve assembly.

13-21. Procedural steps outlined in this section are listed as they are required and in the sequence in which they occur.

NOTE

The manifold assembly shall be considered beyond economical repair when cost of repair parts exceeds approximately 75% of the cost of the manifold and check valve assembly.

Upon completion of any maintenance action (e.g. inspection, repair, modification, etc.), be sure to make the necessary entries on the appropriate forms in accordance with OP-NAVINST 4790.2 Series.

13-22. INSPECTION

13-23. SPECIAL INSPECTION. The Special Inspection consists of a visual inspection performed in conjunction with the aircraft inspection requirements for aircraft in which the manifold and check valve assembly is installed. To perform the inspection, visually inspect the following:

- 1. Legibility of all markings.
- 2. Manifold assembly and surrounding area for freedom from dirt, grease, oil, hydraulic fluid, and other hydrocarbons.
- 3. Line connections for security of attachment and good condition.
- 4. Manifold assembly for obvious damage and good condition.

13-24. BENCH TEST.

13-25. To bench test the manifold and check valve assembly, proceed as follows:



Because of possible vacuum pump explosion, only Water Pumped Nitrogen, Type 1,

Class 1, Grade B (A-A-59503) shall be used when testing oxygen components.

For oxygen test stands, use only Nitrogen from gray cylinders marked NITROGEN OIL FREE in white letters. Two 3-inch wide black bands mark the top of these cylinders. Do not use 3500 psig cylinders as these cylinders are components of Nitrogen Servicing Trailers and cannot be certified contaminant free.

Prior to performing Bench Test on manifold assemblies that have been inducted for scheduled or unscheduled maintenance, the manifold assembly shall be disassembled, cleaned and reassembled in accordance with paragraphs 3-32 through 3-41.

NOTE

Oxygen Systems Components Test Stand Model 1172AS100 or 1316AS100 shall be used for performing Bench Test. Do not attempt to operate test stand without first becoming familiar with the operation of test stand. Refer to appropriate ground support equipment manual.

A high pressure source of nitrogen, other than the test will be needed when performing some of the required test.

The Bench Test shall be performed prior to placing the manifold and check valve assembly in service, in accordance with aircraft inspection cycle every 448 days or after any unscheduled repair action. The Performance Test Sheet (figure 13-3) may be reproduced and used for recording readings.

13-26. EXTERNAL LEAKAGE TEST. To perform the External Leakage Test, proceed as follows:

Materials Required		
Quantity	Description	Reference Number
As Required	Compound, Leak Detection, Type I	MIL-L-25567
As Required	Nitrogen Oil-free, Water Pumped, Type 1, Class 1, Grade B	A-A-59503 NIIN 01-028-9402

Support Equipment Required

Quantity	Description	Reference Number
1	Adapter Assembly	Fabricate in IAW figure 3-4
1	Oxygen Systems Components Test Stand	1172AS100 or 1316AS100

1. Ensure manifold assembly has been disassembled, cleaned, lubricated and reassembled and was received from squadron with appropriate fittings for the filler, C1, C2, C3, and outlet ports.

2. Cap outlet and bottle ports C1, C2, and C3 of the manifold assembly.

3. Connect filler of manifold assembly to N<sub>2</sub> INPUT connection (18) in the altitude chamber using adapter (figure 3-4) and flare fitting No. 4 or No. 5 or No. 5 to No. 5, as required.

4. Ensure all test stand valves and regulators are properly secured and open nitrogen cylinder. Cylinder pressure indicated on SUPPLY PRESSURE gage (9) shall be at least 1500 psig.

5. Position manifold assembly in altitude chamber and close altitude chamber door.

6. Turn INLET PRESS. ON/OFF valve to ON position.

7. Using HIGH PRESS. regulator (Q), slowly apply 500 psig to manifold assembly as indicated on REGULATED HIGH PRESS. gage (10).



Prior to use, inspect leak detection compound. Compound which is not clear and free from suspended materials/sediment is considered contaminated and shall be disposed of.

8. Open altitude chamber door. Apply leak detection compound to all fittings to check for leakage. No leakage is allowed. Record results on Performance Test Sheet.

9. Reposition manifold in altitude chamber and close altitude chamber door.

10. Using HIGH PRESS. regulator (Q), slowly apply 1500 psig to manifold assembly as indicated on REGULATED HIGH PRESS. gage (10).

11. Open altitude chamber door. Apply leak detection compound to all fittings to check for leakage. No leakage is allowed. Record results on Performance Test Sheet.

12. Turn HIGH PRESS. regulator (Q) to vent and open SYSTEM BLEED valve (S) to bleed pressure from manifold assembly.

13. Close SYSTEM BLEED valve (S) and turn INLET PRESS. valve (L) to OFF.

14. Dry manifold assembly of all leak detection compound.

15. If manifold assembly failed external leakage test, refer to Troubleshooting (table 3-2). If no leakage occurred, proceed to next test.

13-27. OUTLET FLOW CHECK VALVE LEAKAGE TEST. To perform the Outlet Flow Check Valve Leakage Test, proceed as follows:

Materials Required

Quantity	Description	Reference Number
As Required	Nitrogen Oil-free, Water Pumped, Type 1, Class 1, Grade B	A-A-59503 NIIN 01-028-9402

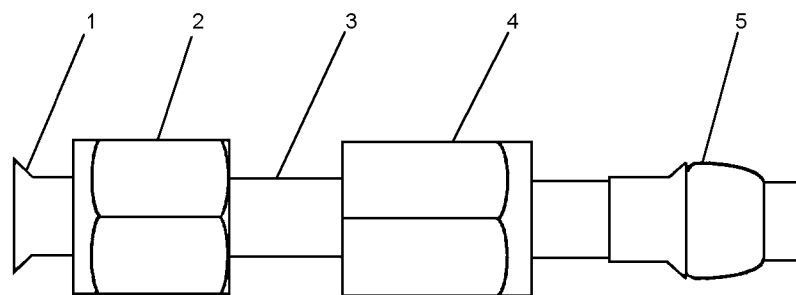
Support Equipment Required

Quantity	Description	Reference Number
1	Adapter Assembly	Fabricate in IAW figure 3-4
1	Oxygen Systems Components Test Stand	1172AS100 or 1316AS100



The manifold assembly shall be positioned with C1, C2, and C3 arrows pointing up during the entire bench test to allow balls to seat properly.

1. Disconnect filler port from N<sub>2</sub> INPUT connection (18) in altitude chamber.

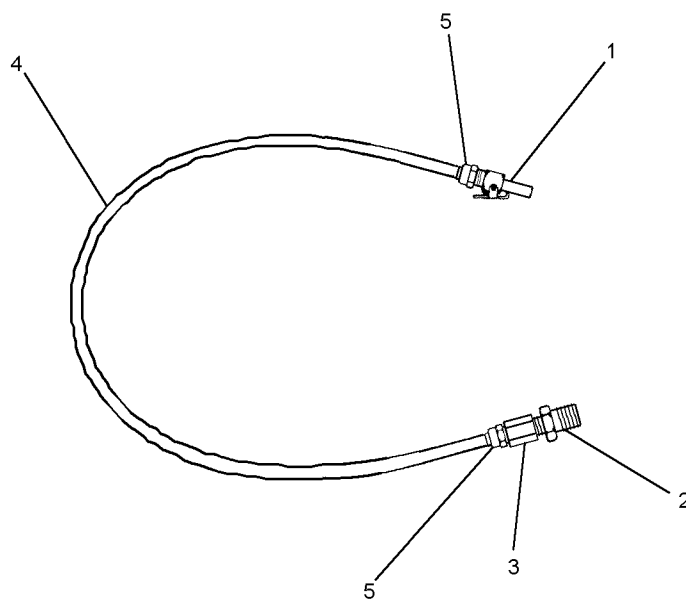


ADAPTER  
VIEW A

1. #5 SLEEVE (MS20819-5J)
2. #5 B-NUT (AN818-5J)
3. 5/16 OD STAINLESS STEEL (MIL-T-6845-5)
4. #5 B-NUT (MS21921-5J)
5. STEEL SLEEVE (MS21922-5)

NOTE:

SOME ACTIVITIES MAY NEED TO BUILD AN ADAPTER WITH TWO FLARED ENDS IN ORDER TO HOOK UP TO N<sub>2</sub> INPUT CONNECTION (18)



LINE ASSEMBLY  
VIEW B

1. QUICK DISCONNECT (F361-1339-1)
2. ADAPTER (AN816-5K) OR NIPPLE (ER816-5J)  
(DEPENDENT ON P/N 2150 OR P/N 2170 BEING TESTED)
3. POLY FLO FEMALE CONNECTOR (266P1/4 IN X 1/8 IN) (266-P04 X 02)
4. 1/4 IN POLY FLO TUBING
5. POLY FLO NUT AND SLEEVE ASSEMBLY (261-P04)

**Figure 13-4. Adapter and Line Assembly**

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Table 13-2. Troubleshooting (External Leakage Test)

Trouble	Probable Cause	Remedy
C1, C2, C3, outlet, and filler ports leaking.	Adapters (12) loose, threads stripped or packing damaged.	Tighten adapter (12) or replace. Replace packing (15)
Hex plugs leaking	Adapters (10) loose, threads stripped or packing damaged.	Tighten adapter (10) or replace. Replace packing (11).

2. Remove caps from C1, C2, and C3 ports.
3. Connect adapter and line assembly (figure 13-4) from C3 port to 20 to 200 LEAKAGE connection (20) in altitude chamber. Turn INLET PRESS. ON/OFF valve to ON.
4. (Oxygen test stand model 1316AS100 only). Place overboard ON/OFF valve (T) to ON position.
5. Remove cap from manifold outlet port and connect manifold outlet port to N<sub>2</sub> INPUT connection (18) in altitude chamber.
6. Using LOW PRESS. regulator (N), slowly apply 50 psig to manifold outlet port, as indicated on N<sub>2</sub> inlet pressure gage (27). Observe OVERBOARD LEAKAGE rotameter (6). Maximum allowable leakage is 50 CCM. Record reading on Performance Test Sheet.
7. Back out (counterclockwise) on LOW PRESS. regulator (N) until spring tension is released.
8. Close altitude chamber door.
9. Using HIGH PRESS. regulator (Q), slowly apply 1000 psig to manifold outlet port, as indicated on REGULATED HIGH PRESS. gage (10). Observe OVERBOARD LEAKAGE rotameter (6). Maximum allowable leakage is 50 CCM. Record reading on Performance Test Sheet.
10. Turn HIGH PRESS. regulator (Q) to vent and open SYSTEM BLEED valve (S).
11. Open altitude chamber door.
12. Disconnect line from C3 port and connect to C2 port.
13. Repeat steps 5 through 11.

14. Disconnect line from C2 port and connect to C1 port.

15. Repeat steps 5 through 11.
16. Disconnect adapter and line assembly from 20 to 200 LEAKAGE connection (20) and manifold C1 port. Disconnect manifold outlet port from N<sub>2</sub> INPUT connection (18) in altitude chamber. Secure all test stand valves.
17. If leakage occurred during test, refer to troubleshooting (table 13-3). If no leakage was present, proceed to next test.

**13-28. FILLER FLOW CHECK VALVE LEAKAGE TEST.** To perform the Filler Flow Check Valve Leakage Test, proceed as follows:

Materials Required		
Quantity	Description	Reference Number
As Required	Nitrogen Oil-free, Water Pumped, Type 1, Class 1, Grade B	A-A-59503 NIIN 01-028-9402
Support Equipment Required		
Quantity	Description	Reference Number
1	Adapter Assembly	Fabricate in IAW figure 3-4
1	Oxygen Systems Components Test Stand	1172AS100 or 1316AS100

1. Cap outlet port of manifold and check valve assembly.
2. Cap C1 and C2 ports.
3. Connect C3 port to N<sub>2</sub> INPUT connection (18) in altitude chamber.
4. Using adapter and line assembly (figure 13-4), connect filler port to 20 to 200 LEAKAGE connection (20) in altitude chamber.



**Table 13-3. Troubleshooting (Outlet Flow Check Valve Leakage Test)**

Trouble	Probable Cause	Remedy
C1, C2, and C3 ports have leakage in excess of 50 CCM.	Upper/lower seats (2) dirty or damaged. Packing (4) damaged	Clean or replace seats (2). Replace packing (4).
	Ball (5) dirty or Damaged.	Clean or replace ball (5).

5. Position manifold check valve assembly in altitude chamber and close door.

6. Turn INLET PRESS. ON/OFF valve (L) to ON.

7. Using LOW PRESS. regulator (N), slowly apply 50 psig to manifold C3 port, as indicated on N<sub>2</sub> inlet pressure gage (27).

8. Observe OVERBOARD LEAKAGE rotameter (6). Maximum allowable leakage is 50 CCM. Record reading on Performance Test Sheet.

9. Back out (counterclockwise) on LOW PRESS. regulator (N) until spring tension is released.

10. Using HIGH PRESS. regulator (Q), slowly apply 1000 psig to manifold C3 port, as indicated on REGULATED HIGH PRESS. gage (10).

11. Observe OVERBOARD LEAKAGE rotameter (6). Maximum allowable leakage is 50 CCM. Record reading on Performance Test Sheet.

12. Turn HIGH PRESS. regulator (Q) to vent and open SYSTEM BLEED valve (S) and bleed pressure from regulated high pressure system close SYSTEM BLEED valve (S).

13. Open altitude chamber door.

14. Disconnect C3 port from N<sub>2</sub> INPUT connection (18).

15. Remove cap from C2 port and connect to N<sub>2</sub> INPUT connection (18).

16. Cap C3 port and reposition manifold in altitude chamber.

17. Close altitude chamber door.

18. Repeat steps 4 through 13.

19. Open altitude chamber door.

20. Disconnect C2 port from N<sub>2</sub> INPUT connection (18).

21. Remove cap from C1 port and connect to N<sub>2</sub> INPUT connection (18).

22. Cap C2 port and reposition manifold in altitude chamber.

23. Repeat steps 4 through 13.

24. Open altitude chamber door.

25. Disconnect adapter and line assembly from 20 to 200 LEAKAGE connection (20) and manifold C1 port. Disconnect manifold filler port from N<sub>2</sub> INPUT connection (18) in altitude chamber. Secure all test stand valves.

26. If leakage occurred during test, refer to troubleshooting (table 13-4). If no leakage was present, proceed to next test.

**13-29. CHECK VALVE AND OUTLET FLOW TEST.** To perform the Check Valve and Outlet Flow Test, proceed as follows:

#### Materials Required

Quantity	Description	Reference Number
As Required	Nitrogen Oil-free, Water Pumped, Type 1, Class 1, Grade B	A-A-59503 NIIN 01-028-9402

#### Support Equipment Required

Quantity	Description	Reference Number
1	Oxygen Systems Components Test Stand	1172AS100 or 1316AS100

**Table 13-4. Troubleshooting (Filler Flow Check Valve Leakage Test)**

Trouble	Probable Cause	Remedy
C1, C2, and C3 ports have leakage in excess of 50 CCM.	Upper/lower seats (2) dirty or damaged. Packing (4) damaged.	Clean or replace seats (2). Replace packing (4).
	Ball (5) dirty or damaged.	Clean or replace ball (5).

1. Connect N<sub>2</sub> Regulator Model 8-250 or equivalent to outside source of high pressure nitrogen supply, other than test stand.

2. Cap manifold C2, C3, and outlet port.

3. Connect manifold filler port to outside source of high pressure nitrogen.

4. Connect manifold C1 port to N<sub>2</sub> INPUT connection (18) in altitude chamber and position manifold assembly in altitude chamber.

5. Turn INLET PRESS. ON/OFF valve (L) to ON and place FLOW SELECTOR valve (M) in the SUIT SIMULATOR position.

6. Open cylinder supplying outside source of nitrogen.

7. Using Nitrogen Regulator Model 8-250, slowly apply 140 psig to manifold assembly as indicated on nitrogen supply gage and N<sub>2</sub> INPUT PRESS. gage (27) in altitude chamber.

#### NOTE

When performing step 8, ensure 140 psig is maintained on nitrogen supply output gage.

8. Slowly open VENT PRESS. valve (H) until the equivalent of 50 lpm is indicated on VENT FLOW manometer (3).

9. Record reading from N<sub>2</sub> INPUT PRESS. gage (27) on Performance Test Sheet. Nitrogen supply output gage and N<sub>2</sub> INPUT PRESS. gage shall not differ more than 20 psig. Close VENT PRESS. valve (H).

10. Back out (counterclockwise) on Nitrogen Regulator Model 8-250 until spring tension is released. Open VENT PRESS. valve (H) until no pressure is indicated on N<sub>2</sub> INPUT PRESS. gage (27) and nitrogen regulator supply gage. Close VENT PRESS. valve (H).

11. Disconnect manifold C1 port from N<sub>2</sub> INPUT connection (18).

12. Uncap manifold C2 port and cap manifold C1 port. Connect manifold C2 port to N<sub>2</sub> INPUT connection (18). Position manifold assembly in altitude chamber.

13. Repeat steps 7 through 10.

14. Disconnect manifold C2 port from N<sub>2</sub> INPUT connection (18).

15. Uncap manifold C3 port and cap manifold C2 port. Connect manifold C3 port to N<sub>2</sub> INPUT connection (18). Position manifold assembly in altitude chamber.

16. Repeat steps 7 through 10.

17. Disconnect manifold C3 port from N<sub>2</sub> INPUT connection (18).

18. Uncap manifold outlet port and cap manifold C3 port. Connect manifold outlet port to N<sub>2</sub> INPUT connection (18). Position manifold assembly in altitude chamber.

19. Repeat steps 7 through 10.

20. Close nitrogen supply cylinder.

21. Disconnect manifold outlet port from N<sub>2</sub> INPUT connection (18) and nitrogen supply cylinder.

22. Secure all test stand valves.

23. Uncap manifold C1, C2, and C3 ports.

24. If manifold failed Check Valve and Outlet Flow Test, refer to Troubleshooting (table 13-5). Proceed to Oxygen Purge.

Table 13-5. Troubleshooting (Check Valve and Outlet Flow Test)

Trouble	Probable Cause	Remedy
Pressure drop between gages exceeds 20 psig.	C1, C2, C3, Filler or Outlet fittings (12) blocked.	Clean Adapter fittings (12).

13-30. OXYGEN PURGE.

NOTE

13-31. To perform the Oxygen Purge, proceed as follows:

Special tools shall be requisitioned directly from the manufacturer Carleton Technologies (CAGE 04577), or obtain commercial equivalent.

Materials Required

Quantity	Description	Reference Number
As Required	Aviator's Breathing Oxygen, Type 1	MIL-O-27210

WARNING

Materials Required

Quantity	Description	Reference Number
As Required	Cloth, Lint-Free, Type II	MIL-C-85043
As Required	Material, Rubber	—

Support Equipment Required

Quantity	Description	Reference Number
1	Special Tool, Retainer	B45322-1 Open Purchase, Carleton Technologies
1	Tool, Seat Removal	Fabricate IAW fig 3-5 (Not E)
1	Punch, Drive Pin	NIIN 00-223-1014
As Required	Heat Shrink 11/64 in. dia.	—

- Do not use test stand for oxygen purge.
1. Connect manifold assembly filler port to regulated high pressure oxygen source.
  2. Purge manifold assembly with 200 psig flow of oxygen for 3 minutes.
  3. Secure high pressure oxygen and disconnect manifold assembly.

Notes: 1. To assemble the Seat Removal tool, proceed as follows: Using approximately 1 inch of small diameter heat shrink, slide heat shrink over end of the drive punch using heat gun, heat the heat shrink ensuring it grasps the shaft firmly. Repeat process until the outer diameter of the heat shrink measures approximately 0.176 of an inch.

13-32. DISASSEMBLY.

13-33. To disassemble the high pressure oxygen manifold and check valve assembly, use index numbers assigned in figure 3-7 unless otherwise noted. The manifold and check valve assembly must be completely disassembled each time a repair action is required to ensure the assembly is free of dirt, grease and other hydrocarbons. Disassemble the manifold and check valve assembly as follows:

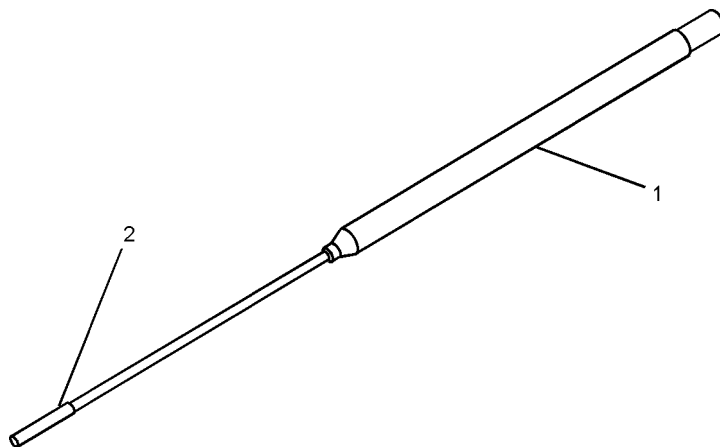


Figure 13-5. Special Tools

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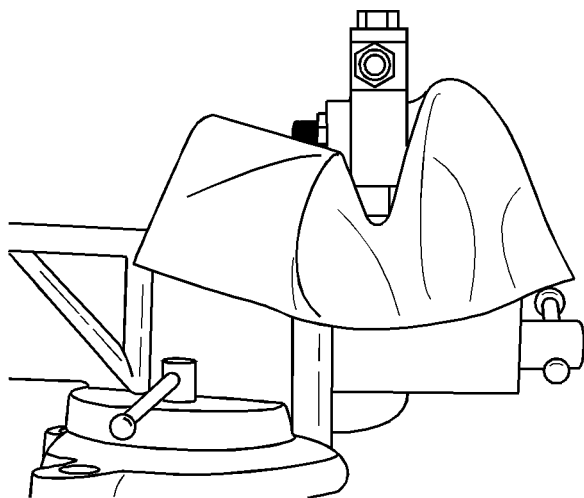


Figure 13-6. Installing Manifold and Check Valve Assembly in Vise

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**CAUTION**

All disassembly, inspection, repair, and assembly must be done on benches having good lighting and in an area provided with air conditioning. Walls, floors, and ceiling should have a smooth finish and should be painted with a non chalking paint which can be kept clean and dust free. If manifold as-

sembly is not going to be reassembled immediately after inspection and cleaning, stow all component parts in a plastic bag to protect from contaminants and moisture.

**NOTE**

Discard all O-rings removed during disassembly.

1. Carefully position the manifold assembly (1) into the vise with the two flat sides of the filler section matting the jaws of the vise and the hex head plugs (11) pointing up.

**CAUTION**

When performing step 2, wrap the two flat surfaces of the manifold assembly with material such as cloth or rubber material to protect the manifold body from damage when installing in vise (figure 13-6).

2. Remove adapter fittings (12) from filler, outlet, C1, C2, and C3 ports.
3. Using the hex socket wrench attachment remove filter retainers (15) and filters (14) from filler, outlet, C1, C2, and C3 adapter fittings (12).
4. Loosen hex head plugs (10) but do not remove on C1, C2, and C3 ports.

- 5. Remove manifold assembly (1) from vise.
- 6. Remove hex head plugs (10) on C1, C2, and C3 ports.
- 7. Using retainer tool remove upper retainer (9) from C1, C2, and C3 ports.
- 8. Holding your hand over C1, C2, and C3 ports, invert the manifold assembly to remove the ball (5) from C1, C2, and C3 ports.
- 9. Using seat tool remove the upper seat (8) from C1, C2, and C3 ports and discard.
- 10. Holding your hand over C1, C2, and C3 ports, invert the manifold assembly to remove sleeve (7), lower retainer (6) and ball (5) from C1, C2, and C3 ports.
- 11. Using seat tool remove the lower seat (2) from C1, C2, and C3 ports and discard.

NOTE

Older manifold assemblies may not have back-up rings (10A and 12A) installed.

12. Remove and discard back-up rings (10A) (if installed) and O-ring packing (11) from hex head plugs (10) and back-up rings (12A) (if installed) and O-ring packing (13) from filler, outlet, C1, C2, and C3 adapter fittings (12).

13-34. CLEANING.

13-35. To clean manifold and check valve assembly, proceed as follows:

Materials Required

Quantity	Description	Reference Number
As Required	Distilled Water	NIIN 00-35-4936
As Required	Soap, Liquid Ivory Dishwashing or Equivalent	Local Purchase
As Required	Nitrogen Oil-free, Water Pumped, Type 1, Class 1, Grade B	A-A-59503 NIIN 01-028-9402

NOTE

If your command has not received the materials and special equipment to perform the new oxygen cleaning procedures outlined in Chapter 4, utilize the Cleaning of Oxygen

Lines paragraph for cleaning of metal parts of the manifold and check valve assembly.

- 1. Clean all metal parts using procedures outlined in Chapter 4.
- 2. Clean all O-ring packing using distilled water and blow dry with clean, oil-free water pumped nitrogen.

13-36. LUBRICATION.

13-37. Lubricate O-ring packings with a light film of Krytox 240 AC or equivalent.

13-38. ASSEMBLY.

13-39. To assemble manifold and check valve assembly, proceed as follows:

Materials Required

Quantity	Description	Reference Number
As Required	Krytox 240 AC Lubricant	NIIN 00-961-8995 (CAGE 73925)

Support Equipment Required

Quantity	Description	Reference Number
1	Wrench, Torque, 300 in-lb.	TE25A NIIN 00-776-1841
1	Hex Socket Wrench Attachment	NIIN 00-596-8508
1	Special Tool, Retainer Removal	B45322-1 Open Purchase, Carleton Technologies
1	Tool, Seat Removal	Fabricate <a href="#">AW Fig 13-5</a>

NOTE

Index numbers in parentheses refer to figure 13-7 unless otherwise noted.

- 1. Install back-up rings (10A), then O-ring packings (11) on hex head plugs (10). Install back-up rings (12A), then O-ring packings (13) on filler, outlet, C1, C2, and C3 adapter fittings (12).
- 2. Using seat tool install the lower seat (2) ensuring O-ring is facing up and back-up ring is facing down into C1, C2, and C3 ports.
- 3. Install ball (5) into C1, C2, and C3 ports.

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4. Install lower retainer (6) into C1, C2, and C3 ports ensuring the four small holes of the lower retainer (6) are facing up.

5. Install sleeve (7) into C1, C2, and C3 ports ensuring the smaller diameter hole of the sleeve (7) is facing up.

6. Using seat tool, install the upper seat (8) ensuring O-ring is facing down and back-up ring is facing up in C1, C2, and C3 ports.

7. Install ball (5) into C1, C2, and C3 ports.

8. Using retainer tool, install upper retainer (9) into C1, C2, and C3 ports ensuring the four small holes of the upper retainer are facing up.

9. Using special tool, torque three upper retainers (9) to 80 in-lb.

10. Install hex head plugs (10) on C1, C2, and C3 ports.

11. Torque three hex plugs (10) 300 in-lb.

12. Install filters (14) and filter retainers (15) into filler, outlet, C1, C2, and C3 adapter fittings (12).

13. Torque five filter retainers (15) to 170 in-lb.

14. Install filler, outlet, C1, C2, and C3 adapter fittings (12).

15. Torque five adapter fittings (12) to 300 in-lb.

## Section 13-5. Illustrated Parts Breakdown

### 13-40. GENERAL.

Assembly (P/N B40831-1) manufactured by Carleton Technologies, Inc.

13-41. This section lists and illustrates the assemblies and detail parts of the High Pressure Oxygen Manifold

13-42. The Illustrated Parts Breakdown should be used during maintenance when requisitioning and identifying parts.

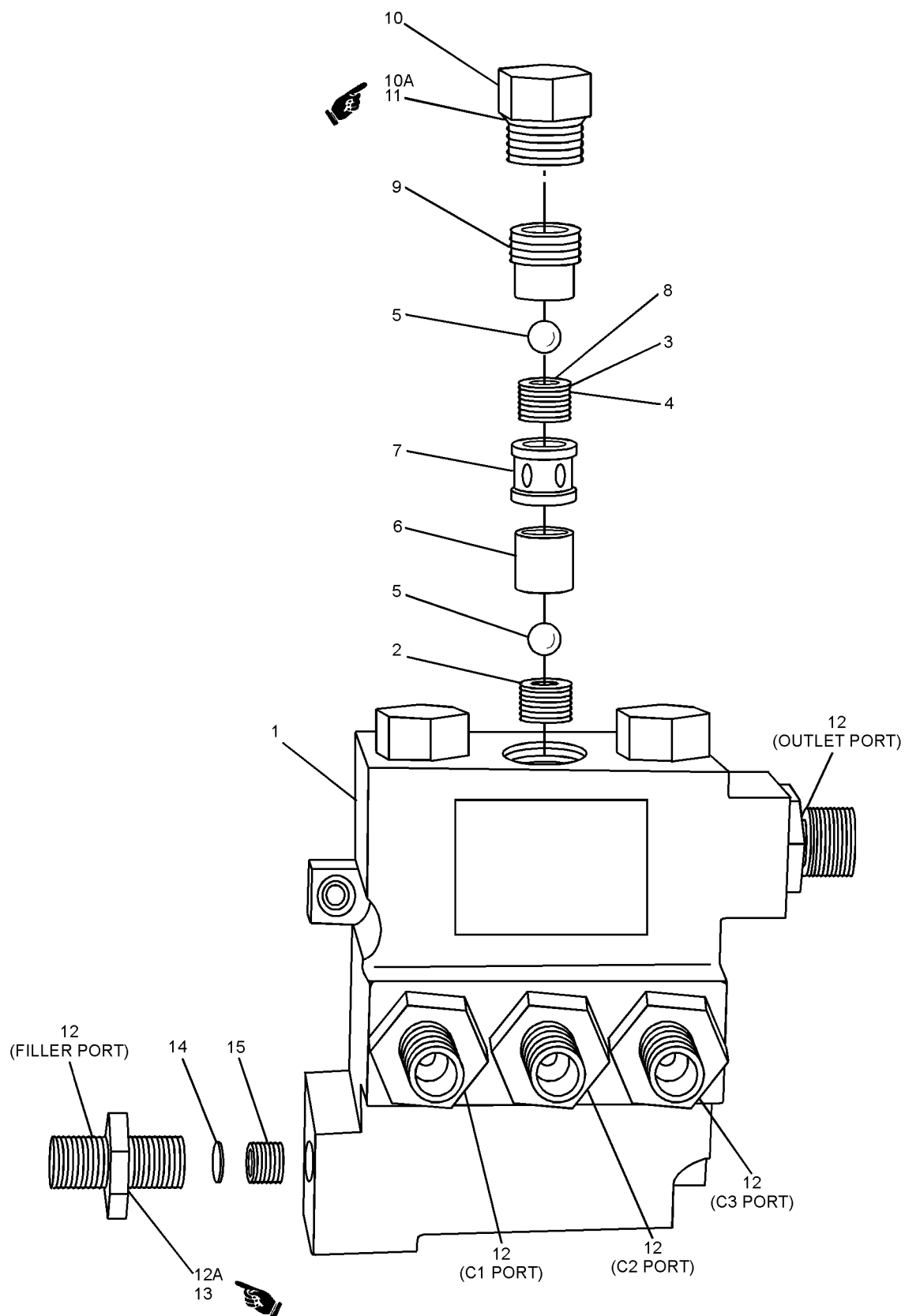


Figure 13-7. High Pressure Oxygen Manifold and Check Valve Assembly

013007

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Figure and Index Number	Part Number	Description							Units Per Assembly	Usable On Code
		1	2	3	4	5	6	7		
13-7	B40831-1	VALVE ASSEMBLY, High Pressure Oxygen . . . . . Manifold and Check							REF	
-1	B40832-1	.	BODY . . . . .						1	
-2	B40836-1	.	SEAT, Lower (KD) . . . . .						3	
-3	1002-0030-011	.	RING, Back-up (KD) . . . . .						6	
-4	MS9068-011	.	PACKING (KD) . . . . .						6	
-5	MS19064-10007	.	BALL (KD) . . . . .						6	
-6	B40837-1	.	RETAINER, Lower . . . . .						3	
-7	B40838-1	.	SLEEVE . . . . .						3	
-8	B40839-1	.	SEAT, Upper (KD) . . . . .						3	
-9	B40840-1	.	RETAINER, Upper . . . . .						3	
-10	MS51840-25SS	.	PLUG, Hex Head . . . . .						3	
-10A	B42852-2	.	RING, Back-up (KD) . . . . .						3	
-11	M25988/1-906	.	PACKING (KD) . . . . .						3	
-12	B40833-1	.	FITTING, Adapter . . . . .						5	
-12A	B42852-1	.	RING, Back-up (KD) . . . . .						5	
-13	M25988/1-905	.	PACKING (KD) . . . . .						5	
-14	B40834-1	.	FILTER (KD) . . . . .						5	
-15	B40835-1	.	RETAINER, Filter . . . . .						5	
-16	B42494-1	PARTS KIT, Monel Manifold . . . . .							REF	



## NUMERICAL INDEX

Part Number	Figure and Index Number	SM&R Code
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B40831-1	13-7-	PAOHH
B40832-1	13-7-1	PAGZZ
B40833-1	13-7-12	PAGZZ
B40834-1	13-7-14	PAGZZ
B40835-1	13-7-15	PAGZZ
B40836-1	13-7-2	PAGZZ
B40837-1	13-7-6	PAGZZ
B40838-1	13-7-7	PAGZZ
B40839-1	13-7-8	PAGZZ
B40840-1	13-7-9	PAGZZ

Part Number	Figure and Index Number	SM&R Code
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B42494-1	13-7-16	PAOZZ
B42852-1	13-7-12A	PAOZZ
B42852-2	13-7-10A	PAOZZ
MS19064-10007	13-7-5	PAGZZ
MS51840-25SS	13-7-10	PAGZZ
MS9068-011	13-7-4	PAGZZ
M25988/1-905	13-7-13	PAGZZ
M25988/1-906	13-7-11	PAGZZ
1002-0030-011	13-7-3	PAGZZ

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